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## TO THE MEMORY OF IVAN NETUKA

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Ivan Netuka, an excellent mathematician, teacher, scientist, representative of the Czech scientific community, our colleague and friend, died after a long illness on October 14, 2020. Let us recall only the basic biographical data. He was born in Hradec Králové, Czechoslovakia (now Czech Republic) on July 7, 1944. Since 1962 till 1967 he studied mathematics at Charles University in Prague, where among his teachers were Vojtěch Jarník and Jan Mařík. It would require much more space to list all his merits; see J. Král and J. Veselý: *Sixty years of Ivan Netuka*, Math. Bohem. 129 (2004), no. 1, 91–107.

Ivan was one of the leading participants of the seminar (J. Král, J. Lukeš, I. Netuka, J. Veselý) on potential theory founded by Josef Král in Prague. Another influence came from Marcel Brelot and Heinz Bauer during his long term stays in Paris (9 months) and Erlangen (4 months). After the change of the regime in 1989,

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The photograph was taken over from *M. Hužvárová*: Struggle for the harmony of grant potential (interview). Akademický bulletin No. 4 (2015), 6–11 (In Czech.), by the authors.

he was elected the dean of the Faculty of Mathematics and Physics of Charles University twice in the period 1999–2005. He was also the vice-president (2008–2014) and president (2014–2016) of the Czech Science Foundation. Since the year 2000, he worked closely with Bauer’s former student Wolfhard Hansen from Bielefeld. They coauthored 26 articles published in leading mathematical journals.

Less known is the fact that Ivan Netuka has substantially contributed to the rebuilding of the mathematical library of the Faculty of Mathematics and Physics of Charles University after its destruction during the flood in Prague in 2002, and together with Vladimír Souček has helped to restore the library’s collection.

Together with his wife Hana he has brought up two sons who are now also professors and leading experts in medicine. He never missed a chance to help people whenever he could. He will live forever in the memories of his friends and colleagues.

The list below is a continuation of the list of Ivan Netuka’s publications that appeared in the above-mentioned paper on the occasion of Ivan’s 60th anniversary. Except these items, Ivan was an author or coauthor of 15 lecture notes, 15 publications of a general character, and 14 translations from English and French to Czech.

Let us briefly describe the contents of the four monographs [M1]–[M4]. The topic of [M1] is the integral representation theory and its numerous applications. The book spans more than 700 pages, and is intended to graduate students as well as researchers. Throughout the 14 chapters, which are accompanied with numerous exercises, the four authors study various aspects of the subject: compact convex sets in locally compact spaces, affine functions on compact convex sets, Choquet theory of function spaces (including applications in potential theory), and more. Notes and comments inserted throughout the book provide historical background for the mathematical results. The book also contains a vast appendix explaining the necessary basic notions and theorems (many of them with complete proofs), thus making the text essentially self-contained.

All the three remaining monographs, [M2]–[M4], are concerned with the history of mathematics. The book [M2] grew out of the discovery of a unique archival document, the lecture notes of Pavel Sergeevich Aleksandrov’s course “Point sets and real functions” written down by Czech mathematician Vojtěch Jarník during his stay in Göttingen in 1927/1928. Besides the transcript of Jarník’s notebook supplemented by detailed comments, the book also contains short biographies of Aleksandrov, Jarník, as well as a brief history of mathematics at the University of Göttingen.

The book [M3] is devoted to two excellent 20th century mathematicians. The early career of Karl Löwner was linked to the German Polytechnic and the German University in Prague. Being of Jewish origin, he was forced to leave the university in 1939 and succeeded to emigrate to the United States, where he changed his name

to Charles Loewner. The latter mathematician, Lipman Bers, was born in Riga. Because of his early political activities, he had to leave Latvia and settled in Prague, where he obtained a doctorate under the supervision of Löwner in 1938. In the same year, he emigrated to France and later to the United States. [M3] focuses on the period before World War II, provides biographies of both men and an overview of their mathematical results (Bers' dissertation thesis on harmonic measures in potential theory, Löwner's works in geometric function theory, monotone matrix functions, and the volume of sets in Hilbert spaces).

The fourth monograph [M4] traces the history of the international cooperation in mathematics from its beginnings in the 19th century, its interruption throughout World War II, and the resurrection efforts after the war. It covers a wide range of topics: the International Congresses of Mathematicians in the period 1897–1936 (including lists of plenary lectures and statistical information on the participants), the early history of the International Mathematical Union and International Commission on Mathematical Instruction, and the establishment of the award by John Charles Fields that is now known as the Fields Medal.

## PUBLICATIONS OF IVAN NETUKA (CONTINUATION)

### Monographs

- [M1] Integral Representation Theory: Applications to Convexity, Banach Spaces and Potential Theory. De Gruyter Studies in Mathematics 35. Walter de Gruyter, Berlin, 2010 (with *J. Lukeš*, *J. Malý* and *J. Spurný*). [zbl](#) [MR](#) [doi](#)
- [M2] Jarník's Notes of the Lecture Course Punktmengen und reele Funktionen by P. S. Aleksandrov (Göttingen 1928). Dějiny Matematiky/History of Mathematics 43. MatfyzPress, Praha, 2010 (with *M. Bečvářová*). [zbl](#) [MR](#)
- [M3] Karl Löwner and His Student Lipman Bers: Pre-War Prague Mathematicians. Heritage of European Mathematics. European Mathematical Society, Zürich, 2015 (with *M. Bečvářová*). [zbl](#) [MR](#) [doi](#)
- [M4] The Impact of the First World War on the International Cooperation of Mathematicians. Česká technika–nakladatelství ČVUT, Praha, 2019 (with *M. Bečvářová*). (In Czech.)

### Publications containing new results

- [A52] Exposed sets in potential theory. Bull. Sci. Math. 130 (2006), 646–659 (with *J. Lukeš* and *T. Moček*). [zbl](#) [MR](#) [doi](#)
- [A53] Potential theory of the farthest point distance function. J. Anal. Math. 101 (2007), 163–177 (with *S. J. Gardiner*). [zbl](#) [MR](#) [doi](#)
- [A54] Methods for calculating stationary distribution in linear models of time series. Statistics 41 (2007), 279–287 (with *J. Anděl* and *P. Ranocha*). [zbl](#) [MR](#) [doi](#)
- [A55] Continuity properties of concave functions in potential theory. J. Convex Anal. 15 (2008), 39–53 (with *W. Hansen*). [zbl](#) [MR](#)

- [A56] Convexity properties of harmonic measures. *Adv. Math.* *218* (2008), 1181–1223 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A57] Density of extremal measures in parabolic potential theory. *Math. Ann.* *345* (2009), 657–684 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A58] Harmonic measures for a point may form a square. *Adv. Math.* *225* (2010), 1830–1839 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A59] The change-of-variables theorem for the Lebesgue integral. *Acta Univ. M. Belii, Ser. Math.* *19* (2011), 37–42. [zbl](#) [MR](#)
- [A60] On the Picard principle for  $\Delta + \mu$ . *Math. Z.* *270* (2012), 783–807 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A61] Jensen measures in potential theory. *Potential Anal.* *37* (2012), 79–90 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A62] On the existence of Evans potentials. *Math. Ann.* *356*, (2013), 1283–1302 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A63] Champagne subdomains with unavoidable bubbles. *Adv. Math.* *244* (2013), 106–116 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A64] Unavoidable sets and harmonic measures living on small sets. *Proc. Lond. Math. Soc.* (3) *109* (2014), 1601–1629 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A65] Representation of potentials. *Rev. Roum. Math. Pures Appl.* *59* (2014), 93–104 (with *W. Hansen*). [zbl](#) [MR](#)
- [A66] Volume mean densities for the heat equation. *Potential Anal.* *41* (2014), 1111–1126 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A67] Hunt’s hypothesis (H) and triangle property of the Green function. *Expo. Math.* *34* (2016), 95–100 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A68] Scaling invariant Harnack inequalities in a general setting. *J. Math. Anal. Appl.* *444* (2016), 980–999 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A69] Reduced functions and Jensen measures. *Proc. Am. Math. Soc.* *146* (2018), 153–160 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A70] Nearly hyperharmonic functions and Jensen measures. *Ann. Acad. Sci. Fenn., Math.* *44* (2019), 3–14 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A71] Semipolar sets and intrinsic Hausdorff measure. *Potential Anal.* *51* (2019), 49–69 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A72] Nearly hyperharmonic functions are infima of excessive functions. *J. Theor. Probab.* *33* (2020), 1613–1629 (with *W. Hansen*). [zbl](#) [MR](#) [doi](#)
- [A73] Lebesgue’s criticism of Carl Neumann’s method in potential theory. *Arch. Hist. Exact Sci.* *74* (2020), 77–108. [zbl](#) [MR](#) [doi](#)
- [A74] Transformation of mathematics between world wars: The case of potential theory. *The Development of Mathematics Between the World Wars*. World Scientific, London, 2021. (In press). [doi](#)
- [A75] Non-absolutely convergent generalized Laplacian. To appear in *Potential Anal.* (with *J. Malý*). [doi](#)
- [A76] On Evans’ and Choquet’s theorem for polar sets. To appear in *Potential Anal.* Available at <https://arxiv.org/abs/2002.08091v1> (2020), 13 pages (with *W. Hansen*).

#### Survey papers and conference contributions

- [B22] The farthest point distance function. *Complex and Harmonic Analysis*. DEStech Publications, Lancaster, 2007, pp. 35–43 (with *S. J. Gardiner*). [zbl](#) [MR](#)
- [B23] The notion of compactness: Origin, development, significance. *32nd Conference History of Mathematics*. MatfyzPress, Praha, 2011, pp. 33–76. (In Czech.)
- [B24] Faculty of Mathematics and Physics fifty years ago. *33rd Conference History of Mathematics*. MatfyzPress, Praha, 2012, pp. 163–176. (In Czech.)

- [B25] Arithmetization of mathematical analysis and the notion of completeness. 35th Conference History of Mathematics. MatfyzPress, Praha, 2014, pp. 21–46. (In Czech.)
- [B26] Generalized limits. 36th Conference History of Mathematics. MatfyzPress, Praha, 2015, pp. 163–182. (In Czech.)
- [B27] History of mathematics at the Faculty of mathematics and physics of Charles University in Prague. 37th Conference History of Mathematics. MatfyzPress, Praha, 2016, pp. 59–92 (with *M. Bečvářová* and *J. Bečvář*). (In Czech.)
- [B28] Central notion of potential theory: Balayage. Mathematical World Between the Wars. Dějiny Matematiky/History of Mathematics 65. Ústav aplikované matematiky Fakulty dopravní ČVUT, Praha, 2020, pp. 209–246. (In Czech.)

### Biographies and history of mathematics

- [C23] Recollections of Professor Aurel Cornea. Pokroky Mat. Fyz. Astron. *50* (2005), 343–344 (with *J. Lukeš* and *J. Veselý*). (In Czech.)
- [C24] In memory of Josef Král. Math. Bohem. *131* (2006), 427–448 (with *J. Lukeš* and *J. Veselý*). [MR](#) [doi](#)
- [C25] In memory of Josef Král. Czech. Math. J. *56* (2006), 1063–1083 (with *J. Lukeš* and *J. Veselý*). [MR](#) [doi](#)
- [C26] Recollections of Josef Král. Pokroky Mat. Fyz. Astron. *51* (2006), 328–330 (with *J. Lukeš* and *J. Veselý*). (In Czech.)
- [C27] In memory of Jarolím Bureš. Pokroky Mat. Fyz. Astron. *52* (2007), 241–243 (with *V. Souček* and *J. Vanžura*). (In Czech.)
- [C28] Pexider’s functional equation. Dějiny Matematiky/History of Mathematics 38. Matfyz-Press, Praha, 2009, pp. 51–56. [zbl](#) [MR](#)
- [C29] Vojtěch Jarník (1897–1970) and his Studies in Göttingen. X. Österreichisches Symposion zur Geschichte der Mathematik. Österreichische Gesellschaft für Wissenschaftsgeschichte, TU Wien, Wien, 2011, pp. 155–168 (with *M. Bečvářová*).
- [C30] Unique historical documents of Jarník’s mathematical notebooks from Göttingen. Rev. Bras. Hist. Math. *13* (2013), 47–60 (with *M. Bečvářová*). [zbl](#) [MR](#) [doi](#)
- [C31] Jubilee of Beloslav Riečan. Pokroky Mat. Fyz. Astron. *61* (2016), 243–245 (with *J. Bečvář* and *M. Bečvářová*). (In Czech.)
- [C32] Tracing the origins of the Fields Medal. Pokroky Mat. Fyz. Astron. *63* (2018), 13–27 (with *M. Bečvářová*). (In Czech.)
- [C33] Journey to the concept of a compact operator. Pokroky Mat. Fyz. Astron. *63* (2018), 153–174. (In Czech.)
- [C34] Potential theory and approximation: Highlights from the scientific work of Stephen Gardiner. Anal. Math. Phys. *9* (2019), 679–709 (with *M. Ghergu*, *M. Manolaki* and *H. Render*). [zbl](#) [MR](#) [doi](#)

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